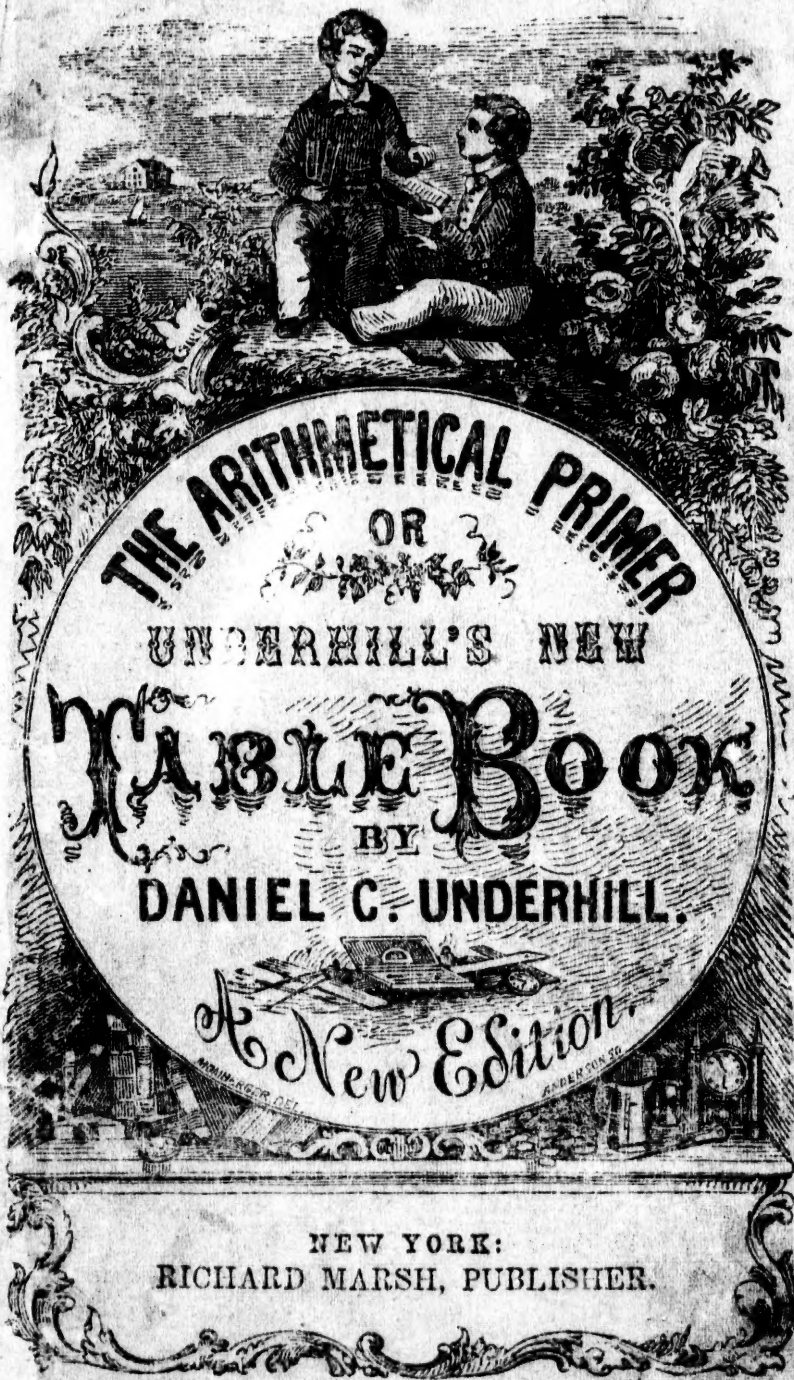




THE ARITHMETICAL PRIMER
OR

UNDERHILL'S NEW

TABLE BOOK
BY

DANIEL C. UNDERHILL.

A New Edition.

NEW YORK:
RICHARD MARSH, PUBLISHER.

Miles P. Reynolds
Fridleyburgh
1854

from H. P. S. S. S.

by road as before

THE ARITHMETICAL PRIMER.

**UNDERHILL'S
NEW TABLE-BOOK;**

OR,

TABLES OF ARITHMETIC MADE EASIER.

BY D. C. UNDERHILL,

FORMERLY TEACHER IN FRIENDS' SCHOOL, NEW YORK.



**A NEW EDITION,
REVISED, ENLARGED, AND IMPROVED.**

**NEW YORK:
RICHARD MARSH, 374 PEARL STREET,
PUBLISHER, STATIONER, AND BLANK-BOOK
MANUFACTURER.**

PREFACE.

UNDERHILL'S NEW TABLE-BOOK, which, under one name or another, has for so many years enjoyed popular favor, is now presented to the public in an enlarged and improved form, and in a more worthy style of typography.

Alphabetical primers are no novelty; the present book, in its various editions, has been as yet the first and only attempt to produce an *arithmetical* primer fitted to initiate the young into the mysteries of figures, and to render the subject of numbers, in their uses and applications, attractive rather than repulsive to children.

A number of new pictorial illustrations will be found in the present edition. The Tables of Money, Weight, Measure, &c., have also been inserted in verse as well as in the standard form, in order to fix the facts permanently in the mind of the learner, so that they, either from memory or association, may be as promptly reproduced, when needed, as that universal one which recalls the number of days in each month.

It is only necessary to add that this little book is suited to the capacity of every child who is able to read, that it is designed to meet the wants of schools in every section of the country, and is equally well-adapted for home or parental instruction.

Entered, according to Act of Congress, in the year 1846, by UNION ADAMS, and re-
entered in the year 1854, by WM. P. COOLIDGE, in the Clerk's Office of the
District Court for the Southern District of New York

C. C. SAVAGE, STEREOTYPED,
13 Chambers st., New York.

Notation.--Table of Figures.

ARABIC.

1 2 3 4 5 6 7 8 9 10

ROMAN.

I II. III. IV. V. VI. VII. VIII. IX. X.

WRITTEN.

1 2 3 4 5 6 7 8 9 10

ONE



Steamship to cross the seas,

1
I

TWO



Hives of honey-making bees;

2

THREE



Steamers stemming swift the tide,

II
3

FOUR



Horses addled for a ride;

III
4

FIVE



Cows that give us milk and cream,

IV
5

SIX



Boys who in a hurry seem;

V
6

SEVEN



Bells which ring a merry peal,

VI
7

EIGHT



Little girls all standing still;

VII
8

NINE



Trees that in the orchard grow,

VIII
9

TEN



Houses standing in a row.

IX
10

NUMERATION

OF

Roman and Arabic Figures.

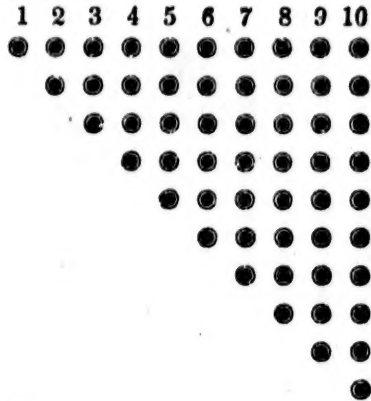
<i>Roman.</i>	<i>Arabic.</i>	<i>Roman.</i>	<i>Arabic.</i>
I. One - - - -	1	XXX. Thirty - - -	30
II. Two - - - -	2	XXXI. Thirty-one - -	31
III. Three - - -	3	XL. Forty - - - -	40
IV. Four - - - -	4	XLI. Forty-one - - -	41
V. Five - - - -	5	L. Fifty - - - -	50
VI. Six - - - -	6	LI. Fifty-one - - -	51
VII. Seven - - -	7	LX. Sixty - - - -	60
VIII. Eight - - -	8	LXI. Sixty-one - - -	61
IX. Nine - - - -	9	LXX. Seventy - - -	70
X. Ten - - - -	10	LXXI. Seventy-one -	71
XI. Eleven - - -	11	LXXX. Eighty - - -	80
XII. Twelve - - -	12	LXXXI. Eighty-one -	81
XIII. Thirteen - -	13	XC. Ninety - - - -	90
XIV. Fourteen - -	14	XCI. Ninety-one - -	91
XV. Fifteen - - -	15	XCV. Ninety-five - -	95
XVI. Sixteen - - -	16	XCIX. Ninety-nine -	99
XVII. Seventeen - -	17	C. 1 hundred - - -	100
XVIII. Eighteen - -	18	CC. 2 hundred - - -	200
XIX. Nineteen - -	19	CCC. 3 hundred - - -	300
XX. Twenty - - -	20	CCCC. 4 hundred - -	400
XXI. Twenty-one - -	21	D. 5 hundred - - -	500
XXII. Twenty-two - -	22	DC. 6 hundred - - -	600
XXIII. Twenty-three -	23	DCC. 7 hundred - - -	700
XXIV. Twenty-four - -	24	DCCC. 8 hundred - -	800
XXV. Twenty-five - -	25	DCCCC. 9 hundred - -	900
XXVI. Twenty-six - -	26	M. 1 thousand - - -	1000
XXVII. Twenty-seven -	27	M,DCCC,LIV. One thousand	
XXVIII. Twenty-eight -	28	eight hundred and	
XXIX. Twenty-nine - -	29	fifty-four, 1854.	

NOTE.—The Roman characters are seven in number—I, V, X, L, C, D, M—and any number may be formed by combinations of them.

The repetition of a letter repeats its value in the number. X being ten, XX make twenty, XXX thirty, &c. A letter of less value, placed at the right-hand of one of a greater value, increases the number; placed at the left-hand, it diminishes the number. Thus, V being five, and I one, VI is six, and IV four; XI eleven, and IX nine, &c.

The Roman mode of numbering is now but little used; the Arabic being preferred for business and other purposes.

Numeration.



How many balls are there in each line, counting three ways? Begin at 1, and count all around on the outside back to 1 again, and see if there are not twenty-seven. Then count the whole, and see if there are not 55

Read the following numbers:—

45, 78, 67, 13, 46, 79, 35, 68. 14, 80, 36, 69, 15, 48, 81, 37.
 70, 49, 82, 43, 76, 17, 50, 83. 38, 18, 51, 84, 39, 72, 19, 52.
 85, 20, 53, 41, 74, 87, 42, 75. 22, 55, 88, 23, 56, 24, 57, 90.
 11, 44, 25, 91, 77, 26, 59, 33. 92, 66, 27, 60, 93, 32, 65, 94.

NUMERATION TABLE.

The amount expressed by figures increases from right to left, but in reading or numerating them, commence at the left hand.

Eight hundred and eighty-eight Sextillions.	Seven hundred and seventy-seven Quintillions.	Six hundred and sixty-six Quadrillions.	Five hundred and fifty-five Trillions.	Four hundred and forty-four Billions.	Three hundred and thirty-three Millions.	Two hundred and twenty-two Thousands.	One hundred and eleven Units.
Hundreds of Sextillions	Hundreds of Quintillions	Hundreds of Quadrillions	Hundreds of Trillions	Hundreds of Billions	Hundreds of Millions	Hundreds of Thousands	Hundreds
Tens of Sextillions	Tens of Quintillions	Tens of Quadrillions	Tens of Trillions	Tens of Billions	Tens of Millions	Tens of Thousands	Tens
Sextillions	Quintillions	Quadrillions	Trillions	Billions	Millions	Thousands	Units
888	777	666	555	444	333	222	111

NOTE.—The above is the French method, and the one generally used; the English method points off six figures to a period.

Table of Addition.

1 and 1 are 2	2 and 1 are 3	3 and 1 are 4
1 and 2 are 3	2 and 2 are 4	3 and 2 are 5
1 and 3 are 4	2 and 3 are 5	3 and 3 are 6
1 and 4 are 5	2 and 4 are 6	3 and 4 are 7
1 and 5 are 6	2 and 5 are 7	3 and 5 are 8
1 and 6 are 7	2 and 6 are 8	3 and 6 are 9
1 and 7 are 8	2 and 7 are 9	3 and 7 are 10
1 and 8 are 9	2 and 8 are 10	3 and 8 are 11
1 and 9 are 10	2 and 9 are 11	3 and 9 are 12
1 and 10 are 11	2 and 10 are 12	3 and 10 are 13
1 and 11 are 12	2 and 11 are 13	3 and 11 are 14
4 and 1 are 5	5 and 1 are 6	6 and 1 are 7
4 and 2 are 6	5 and 2 are 7	6 and 2 are 8
4 and 3 are 7	5 and 3 are 8	6 and 3 are 9
4 and 4 are 8	5 and 4 are 9	6 and 4 are 10
4 and 5 are 9	5 and 5 are 10	6 and 5 are 11
4 and 6 are 10	5 and 6 are 11	6 and 6 are 12
4 and 7 are 11	5 and 7 are 12	6 and 7 are 13
4 and 8 are 12	5 and 8 are 13	6 and 8 are 14
4 and 9 are 13	5 and 9 are 14	6 and 9 are 15
4 and 10 are 14	5 and 10 are 15	6 and 10 are 16
4 and 11 are 15	5 and 11 are 16	6 and 11 are 17
7 and 1 are 8	8 and 1 are 9	9 and 1 are 10
7 and 2 are 9	8 and 2 are 10	9 and 2 are 11
7 and 3 are 10	8 and 3 are 11	9 and 3 are 12
7 and 4 are 11	8 and 4 are 12	9 and 4 are 13
7 and 5 are 12	8 and 5 are 13	9 and 5 are 14
7 and 6 are 13	8 and 6 are 14	9 and 6 are 15
7 and 7 are 14	8 and 7 are 15	9 and 7 are 16
7 and 8 are 15	8 and 8 are 16	9 and 8 are 17
7 and 9 are 16	8 and 9 are 17	9 and 9 are 18
7 and 10 are 17	8 and 10 are 18	9 and 10 are 19
7 and 11 are 18	8 and 11 are 19	9 and 11 are 20
10 and 1 are 11	11 and 1 are 12	12 and 1 are 13
10 and 2 are 12	11 and 2 are 13	12 and 2 are 14
10 and 3 are 13	11 and 3 are 14	12 and 3 are 15
10 and 4 are 14	11 and 4 are 15	12 and 4 are 16
10 and 5 are 15	11 and 5 are 16	12 and 5 are 17
10 and 6 are 16	11 and 6 are 17	12 and 6 are 18
10 and 7 are 17	11 and 7 are 18	12 and 7 are 19
10 and 8 are 18	11 and 8 are 19	12 and 8 are 20
10 and 9 are 19	11 and 9 are 20	12 and 9 are 21
10 and 10 are 20	11 and 10 are 21	12 and 10 are 22
10 and 11 are 21	11 and 11 are 22	12 and 11 are 23

Addition in Rhyme.



Two pennies had John,
His sister had 1,
They gave them to me,
And then I had 3,
Thus you may see,
That 2 and 1 make 3.



Two apples had Jane,
And Mary 2 more,
They gave them to Sarah,
And then she had 4;
Thus, 2 and 2 are 4, we know,
The apples make it plainly so.



James has 2 pears we see,
Then suppose I give him 3,
How many will there be?
2 and 3 are 5 we know,
So 3 and 2 for 5 must go,
Look in the table and find it so.



Margaret had a pincushion,
Presented by her mother,
It had 5 pins upon one side,
And 4 pins on the other—
On the little velvet ball,
How many pins were there in all?
5 and 4, as 9 we view,
And 4 and 5 are 9, as true,
The table will say the same to you.

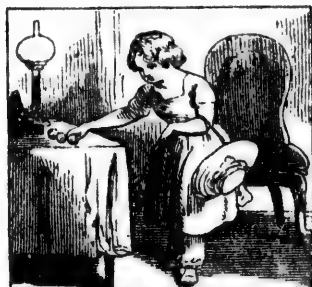
Subtraction Table.

1 from 1 leaves	0	5 from 5 leaves	0	9 from 9 leaves	0
1 from 2 leaves	1	5 from 6 leaves	1	9 from 10 leaves	1
1 from 3 leaves	2	5 from 7 leaves	2	9 from 11 leaves	2
1 from 4 leaves	3	5 from 8 leaves	3	9 from 12 leaves	3
1 from 5 leaves	4	5 from 9 leaves	4	9 from 13 leaves	4
1 from 6 leaves	5	5 from 10 leaves	5	9 from 14 leaves	5
1 from 7 leaves	6	5 from 11 leaves	6	9 from 15 leaves	6
1 from 8 leaves	7	5 from 12 leaves	7	9 from 16 leaves	7
1 from 9 leaves	8	5 from 13 leaves	8	9 from 17 leaves	8
1 from 10 leaves	9	5 from 14 leaves	9	9 from 18 leaves	9
1 from 11 leaves	10	5 from 15 leaves	10	9 from 19 leaves	10
2 from 2 leaves	0	6 from 6 leaves	0	10 from 10 leaves	0
2 from 3 leaves	1	6 from 7 leaves	1	10 from 11 leaves	1
2 from 4 leaves	2	6 from 8 leaves	2	10 from 12 leaves	2
2 from 5 leaves	3	6 from 9 leaves	3	10 from 13 leaves	3
2 from 6 leaves	4	6 from 10 leaves	4	10 from 14 leaves	4
2 from 7 leaves	5	6 from 11 leaves	5	10 from 15 leaves	5
2 from 8 leaves	6	6 from 12 leaves	6	10 from 16 leaves	6
2 from 9 leaves	7	6 from 13 leaves	7	10 from 17 leaves	7
2 from 10 leaves	8	6 from 14 leaves	8	10 from 18 leaves	8
2 from 11 leaves	9	6 from 15 leaves	9	10 from 19 leaves	9
2 from 12 leaves	10	6 from 16 leaves	10	10 from 20 leaves	10
3 from 3 leaves	0	7 from 7 leaves	0	11 from 11 leaves	0
3 from 4 leaves	1	7 from 8 leaves	1	11 from 12 leaves	1
3 from 5 leaves	2	7 from 9 leaves	2	11 from 13 leaves	2
3 from 6 leaves	3	7 from 10 leaves	3	11 from 14 leaves	3
3 from 7 leaves	4	7 from 11 leaves	4	11 from 15 leaves	4
3 from 8 leaves	5	7 from 12 leaves	5	11 from 16 leaves	5
3 from 9 leaves	6	7 from 13 leaves	6	11 from 17 leaves	6
3 from 10 leaves	7	7 from 14 leaves	7	11 from 18 leaves	7
3 from 11 leaves	8	7 from 15 leaves	8	11 from 19 leaves	8
3 from 12 leaves	9	7 from 16 leaves	9	11 from 20 leaves	9
3 from 13 leaves	10	7 from 17 leaves	10	11 from 21 leaves	10
4 from 4 leaves	0	8 from 8 leaves	0	12 from 12 leaves	0
4 from 5 leaves	1	8 from 9 leaves	1	12 from 13 leaves	1
4 from 6 leaves	2	8 from 10 leaves	2	12 from 14 leaves	2
4 from 7 leaves	3	8 from 11 leaves	3	12 from 15 leaves	3
4 from 8 leaves	4	8 from 12 leaves	4	12 from 16 leaves	4
4 from 9 leaves	5	8 from 13 leaves	5	12 from 17 leaves	5
4 from 10 leaves	6	8 from 14 leaves	6	12 from 18 leaves	6
4 from 11 leaves	7	8 from 15 leaves	7	12 from 19 leaves	7
4 from 12 leaves	8	8 from 16 leaves	8	12 from 20 leaves	8
4 from 13 leaves	9	8 from 17 leaves	9	12 from 21 leaves	9
4 from 14 leaves	10	8 from 18 leaves	10	12 from 22 leaves	10



William had 3 peaches fair,
George and Thomas each his share,
One 8, the other 7;
Now search the table, and you will
see,
That peaches 8 and peaches 3,
Make peaches just 11;
Add 7 peaches to 11, as the table
shows,
And you'll have just 18, so the story
goes.

Subtraction in Rhyme.



Three apples on a table lie,
And Jane takes one in passing by;
How many does she leave?
1 from 3 leaves 2,
So says the table true;
And 2 from 3 leaves 1,
When the work is rightly done;
And so must all believe.



Charlotte had 11 pins,
And gave Eliza 4;
Then all she had remaining
Were 7 and no more.
4 and 7 make 11,
Then 4 from 11 leaves 7,
And 7 from 11, four.



Peter has just 18 plums,
And gives his sister 10,
As gaily in the room he comes;
How many has he then?
The table makes it clear and
straight,
That 10 from 18 leaves just 8;
And 8 from 18, ten—
From 18 plums take 10 away,
8 plums are left, 'tis plain as day.

Table of Multiplication.

2 times 1 are	2	3 times 1 are	3	4 times 1 are	4
2 times 2 are	4	3 times 2 are	6	4 times 2 are	8
2 times 3 are	6	3 times 3 are	9	4 times 3 are	12
2 times 4 are	8	3 times 4 are	12	4 times 4 are	16
2 times 5 are	10	3 times 5 are	15	4 times 5 are	20
2 times 6 are	12	3 times 6 are	18	4 times 6 are	24
2 times 7 are	14	3 times 7 are	21	4 times 7 are	28
2 times 8 are	16	3 times 8 are	24	4 times 8 are	32
2 times 9 are	18	3 times 9 are	27	4 times 9 are	36
2 times 10 are	20	3 times 10 are	30	4 times 10 are	40
2 times 11 are	22	3 times 11 are	33	4 times 11 are	44
2 times 12 are	24	3 times 12 are	36	4 times 12 are	48

5 times 1 are	5	6 times 1 are	6	7 times 1 are	7
5 times 2 are	10	6 times 2 are	12	7 times 2 are	14
5 times 3 are	15	6 times 3 are	18	7 times 3 are	21
5 times 4 are	20	6 times 4 are	24	7 times 4 are	28
5 times 5 are	25	6 times 5 are	30	7 times 5 are	35
5 times 6 are	30	6 times 6 are	36	7 times 6 are	42
5 times 7 are	35	6 times 7 are	42	7 times 7 are	49
5 times 8 are	40	6 times 8 are	48	7 times 8 are	56
5 times 9 are	45	6 times 9 are	54	7 times 9 are	63
5 times 10 are	50	6 times 10 are	60	7 times 10 are	70
5 times 11 are	55	6 times 11 are	66	7 times 11 are	77
5 times 12 are	60	6 times 12 are	72	7 times 12 are	84

8 times 1 are	8	9 times 1 are	9	10 times 1 are	10
8 times 2 are	16	9 times 2 are	18	10 times 2 are	20
8 times 3 are	24	9 times 3 are	27	10 times 3 are	30
8 times 4 are	32	9 times 4 are	36	10 times 4 are	40
8 times 5 are	40	9 times 5 are	45	10 times 5 are	50
8 times 6 are	48	9 times 6 are	54	10 times 6 are	60
8 times 7 are	56	9 times 7 are	63	10 times 7 are	70
8 times 8 are	64	9 times 8 are	72	10 times 8 are	80
8 times 9 are	72	9 times 9 are	81	10 times 9 are	90
8 times 10 are	80	9 times 10 are	90	10 times 10 are	100
8 times 11 are	88	9 times 11 are	99	10 times 11 are	110
8 times 12 are	96	9 times 12 are	108	10 times 12 are	120

11 times 1 are	11	11 times 5 are	55	11 times 9 are	99
11 times 2 are	22	11 times 6 are	66	11 times 10 are	110
11 times 3 are	33	11 times 7 are	77	11 times 11 are	121
11 times 4 are	44	11 times 8 are	88	11 times 12 are	132

12 times 1 are	12	12 times 5 are	60	12 times 9 are	108
12 times 2 are	24	12 times 6 are	72	12 times 10 are	120
12 times 3 are	36	12 times 7 are	84	12 times 11 are	132
12 times 4 are	48	12 times 8 are	96	12 times 12 are	144

Table of Multiplication—CONTINUED.

13 times 1 are 13	14 times 1 are 14	15 times 1 are 15
13 times 2 are 26	14 times 2 are 28	15 times 2 are 30
13 times 3 are 39	14 times 3 are 42	15 times 3 are 45
13 times 4 are 52	14 times 4 are 56	15 times 4 are 60
13 times 5 are 65	14 times 5 are 70	15 times 5 are 75
13 times 6 are 78	14 times 6 are 84	15 times 6 are 90
13 times 7 are 91	14 times 7 are 98	15 times 7 are 105
13 times 8 are 104	14 times 8 are 112	15 times 8 are 120
13 times 9 are 117	14 times 9 are 126	15 times 9 are 135
13 times 10 are 130	14 times 10 are 140	15 times 10 are 150
13 times 11 are 143	14 times 11 are 154	15 times 11 are 165
13 times 12 are 156	14 times 12 are 168	15 times 12 are 180
16 times 1 are 16	17 times 1 are 17	18 times 1 are 18
16 times 2 are 32	17 times 2 are 34	18 times 2 are 36
16 times 3 are 48	17 times 3 are 51	18 times 3 are 54
16 times 4 are 64	17 times 4 are 68	18 times 4 are 72
16 times 5 are 80	17 times 5 are 85	18 times 5 are 90
16 times 6 are 96	17 times 6 are 102	18 times 6 are 108
16 times 7 are 112	17 times 7 are 119	18 times 7 are 126
16 times 8 are 128	17 times 8 are 136	18 times 8 are 144
16 times 9 are 144	17 times 9 are 153	18 times 9 are 162
16 times 10 are 160	17 times 10 are 170	18 times 10 are 180
16 times 11 are 176	17 times 11 are 187	18 times 11 are 198
16 times 12 are 192	17 times 12 are 204	18 times 12 are 216
19 times 1 are 19	20 times 1 are 20	21 times 1 are 21
19 times 2 are 38	20 times 2 are 40	21 times 2 are 42
19 times 3 are 57	20 times 3 are 60	21 times 3 are 63
19 times 4 are 76	20 times 4 are 80	21 times 4 are 84
19 times 5 are 95	20 times 5 are 100	21 times 5 are 105
19 times 6 are 114	20 times 6 are 120	21 times 6 are 126
19 times 7 are 133	20 times 7 are 140	21 times 7 are 147
19 times 8 are 152	20 times 8 are 160	21 times 8 are 168
19 times 9 are 171	20 times 9 are 180	21 times 9 are 189
19 times 10 are 190	20 times 10 are 200	21 times 10 are 210
19 times 11 are 209	20 times 11 are 220	21 times 11 are 231
19 times 12 are 228	20 times 12 are 240	21 times 12 are 252
22 times 1 are 22	22 times 5 are 110	22 times 9 are 198
22 times 2 are 44	22 times 6 are 132	22 times 10 are 220
22 times 3 are 66	22 times 7 are 154	22 times 11 are 242
22 times 4 are 88	22 times 8 are 176	22 times 12 are 264
23 times 1 are 23	23 times 5 are 115	23 times 9 are 207
23 times 2 are 46	23 times 6 are 138	23 times 10 are 230
23 times 3 are 69	23 times 7 are 161	23 times 11 are 253
23 times 4 are 92	23 times 8 are 184	23 times 12 are 276

Multiplication in Rhyme.



Samuel has 2 knives,
And Moses twice the same;
How many then for Moses,
Ought we to name?
Twice means as many more,
Then Moses must have 4;
Twice 1 are 2,
Says the table to you:
And twice 2 are 4,
It says furthermore.



Amelia has 2 roses,
And Frances has 2 more,
Miss Helen has another 2,
To add unto the 4—
And 4 and 2 are 6 we call,
The number which they had in all:
So 3 times 2 are 6 we see,
And 6 we say for 2 times 3.



Four boys at marbles play,
And each has 5 they say;
How many marbles have they all?
Can any one the number call?
Yes, 5 and 5 we know are 10,
Two other fives the same again;
And then 2 tens are 20;
So 4 times 5 do 20 make,
And 5 times 4 do 20 take,
And here are marbles plenty.

Division in Rhyme.



Since 2 ones make 2 we know,
Then 2 but once in 2 will go;
Thus the father doth divide
2 apples, one to either side,
Which 2 good children share
As you can see them there.

Division Table.

1	into	2	goes	2	times	4	into	8	goes	2	times
1	into	3	goes	3	times	4	into	12	goes	3	times
1	into	4	goes	4	times	4	into	16	goes	4	times
1	into	5	goes	5	times	4	into	20	goes	5	times
1	into	6	goes	6	times	4	into	24	goes	6	times
1	into	7	goes	7	times	4	into	28	goes	7	times
1	into	8	goes	8	times	4	into	32	goes	8	times
1	into	9	goes	9	times	4	into	36	goes	9	times
1	into	10	goes	10	times	4	into	40	goes	10	times
1	into	11	goes	11	times	4	into	44	goes	11	times
1	into	12	goes	12	times	4	into	48	goes	12	times
1	into	13	goes	13	times	4	into	52	goes	13	times
1	into	14	goes	14	times	4	into	56	goes	14	times
1	into	15	goes	15	times	4	into	60	goes	15	times
1	into	16	goes	16	times	4	into	64	goes	16	times
2	into	4	goes	2	times	5	into	10	goes	2	times
2	into	6	goes	3	times	5	into	15	goes	3	times
2	into	8	goes	4	times	5	into	20	goes	4	times
2	into	10	goes	5	times	5	into	25	goes	5	times
2	into	12	goes	6	times	5	into	30	goes	6	times
2	into	14	goes	7	times	5	into	35	goes	7	times
2	into	16	goes	8	times	5	into	40	goes	8	times
2	into	18	goes	9	times	5	into	45	goes	9	times
2	into	20	goes	10	times	5	into	50	goes	10	times
2	into	22	goes	11	times	5	into	55	goes	11	times
2	into	24	goes	12	times	5	into	60	goes	12	times
2	into	26	goes	13	times	5	into	65	goes	13	times
2	into	28	goes	14	times	5	into	70	goes	14	times
2	into	30	goes	15	times	5	into	75	goes	15	times
2	into	32	goes	16	times	5	into	80	goes	16	times
3	into	6	goes	2	times	6	into	12	goes	2	times
3	into	9	goes	3	times	6	into	18	goes	3	times
3	into	12	goes	4	times	6	into	24	goes	4	times
3	into	15	goes	5	times	6	into	30	goes	5	times
3	into	18	goes	6	times	6	into	36	goes	6	times
3	into	21	goes	7	times	6	into	42	goes	7	times
3	into	24	goes	8	times	6	into	48	goes	8	times
3	into	27	goes	9	times	6	into	54	goes	9	times
3	into	30	goes	10	times	6	into	60	goes	10	times
3	into	33	goes	11	times	6	into	66	goes	11	times
3	into	36	goes	12	times	6	into	72	goes	12	times
3	into	39	goes	13	times	6	into	78	goes	13	times
3	into	42	goes	14	times	6	into	84	goes	14	times
3	into	45	goes	15	times	6	into	90	goes	15	times
3	into	48	goes	16	times	6	into	96	goes	16	times

Division Table—CONTINUED.

7	into	14	goes	2	times	10	into	20	goes	2	times
7	into	21	goes	3	times	10	into	30	goes	3	times
7	into	28	goes	4	times	10	into	40	goes	4	times
7	into	35	goes	5	times	10	into	50	goes	5	times
7	into	42	goes	6	times	10	into	60	goes	6	times
7	into	49	goes	7	times	10	into	70	goes	7	times
7	into	56	goes	8	times	10	into	80	goes	8	times
7	into	63	goes	9	times	10	into	90	goes	9	times
7	into	70	goes	10	times	10	into	100	goes	10	times
7	into	77	goes	11	times	10	into	110	goes	11	times
7	into	84	goes	12	times	10	into	120	goes	12	times
7	into	91	goes	13	times	10	into	130	goes	13	times
7	into	98	goes	14	times	10	into	140	goes	14	times
7	into	105	goes	15	times	10	into	150	goes	15	times
7	into	112	goes	16	times	10	into	160	goes	16	times
8	into	16	goes	2	times	11	into	22	goes	2	times
8	into	24	goes	3	times	11	into	33	goes	3	times
8	into	32	goes	4	times	11	into	44	goes	4	times
8	into	40	goes	5	times	11	into	55	goes	5	times
8	into	48	goes	6	times	11	into	66	goes	6	times
8	into	56	goes	7	times	11	into	77	goes	7	times
8	into	64	goes	8	times	11	into	88	goes	8	times
8	into	72	goes	9	times	11	into	99	goes	9	times
8	into	80	goes	10	times	11	into	110	goes	10	times
8	into	88	goes	11	times	11	into	121	goes	11	times
8	into	96	goes	12	times	11	into	132	goes	12	times
8	into	104	goes	13	times	11	into	143	goes	13	times
8	into	112	goes	14	times	11	into	154	goes	14	times
8	into	120	goes	15	times	11	into	165	goes	15	times
8	into	128	goes	16	times	11	into	176	goes	16	times
9	into	18	goes	2	times	12	into	24	goes	2	times
9	into	27	goes	3	times	12	into	36	goes	3	times
9	into	36	goes	4	times	12	into	48	goes	4	times
9	into	45	goes	5	times	12	into	60	goes	5	times
9	into	54	goes	6	times	12	into	72	goes	6	times
9	into	63	goes	7	times	12	into	84	goes	7	times
9	into	72	goes	8	times	12	into	96	goes	8	times
9	into	81	goes	9	times	12	into	108	goes	9	times
9	into	90	goes	10	times	12	into	120	goes	10	times
9	into	99	goes	11	times	12	into	132	goes	11	times
9	into	108	goes	12	times	12	into	144	goes	12	times
9	into	117	goes	13	times	12	into	156	goes	13	times
9	into	126	goes	14	times	12	into	168	goes	14	times
9	into	135	goes	15	times	12	into	180	goes	15	times
9	into	144	goes	16	times	12	into	192	goes	16	times

Division in Rhyme.



Harriet has 4 oranges,
For little Jane and Mary,
In equal share, each has a pair,
The numbers do not vary.
And thus we see Division true;
Both have the 4, and each has 2;
2 twos are then in four we know,
And 2 in 4 will 2 times go.



Six large apples Henry had,
To give to Silas, John, and
Thomas,
And 2 he gave each little lad,
According to his promise;
And as he dealt them round,
3 twos in 6 were found;
So 2 in 6 will 3 times go,
Then 3 in 6 goes twice we know.



A teacher had just 20 toys,
To give to 4 good little boys,
He would the fives in 20 teach,
And so he gave 5 toys to each,
4 fives in 20 thus he shows,
And then 5 fours, as each boy
knows;
So 5 into 20 will go 4 times,
And 4 into 20 go 5, correctly
chimes;
The table will show you the truth
of the rhymes.

The Uses of the Tables.

Notation writes the figures down,
And *Numeration* reads them—
Addition makes two numbers one,
And more so, when it needs
them.
Subtraction of two numbers makes
A third—as you have seen them—
The smaller from the larger takes,
And shows the odds between them,
Multiplication, in a word,

Adds much with little labor,
And with two numbers makes a
third,
A far superior neighbor.
Division with two numbers shows
How many times attaining,
The less one in the larger goes,
And what there is remaining.
The large square table at a view,
Will show what each and all can do

TABLES OF MONEY, WEIGHTS, MEASURES, ETC.

I. MONEY.

Money has various names, or rates :
FEDERAL, or that of the United States,
 Has *Eagle, Dollars, Dimes, and Cents.*
STERLING, or English, which one sees
 In England and her colonies,
 Has *Guineas, Pounds, Shillings, and Pence.*
FRENCH, used in France through all her ranks,
 Has simple *Centimes, Décimes, Francs.*



100 Cents.



3 Cents



50 Cents.



10 Cents.



250 Cents.



500 Cents.



25 Cents.

FEDERAL, OR UNITED STATES MONEY.—The value of this money increases by tens, which makes it very simple and easy to reckon, and hence accounts are mostly kept in Dollars and Cents, in this country.

TABLE.

10 mills <i>m.</i> make	-	-	1 cent, <i>c.</i>
10 cents	-	-	1 dime, <i>d.</i>
10 dimes	-	-	1 dollar, <i>ℳ.</i>
10 dollars	-	-	1 eagle, <i>E.</i>

Observe the denominations—Eagle, *E.* ; dollar, *ℳ.* ; dime, *d.* ; cent, *c.* ; mill, *m.*

The mill is not a coin, and is only used in counting.

Beside money made of silver, gold, and copper, there are also pieces of ornamented paper representing money, upon which are printed sums from one dollar to one thousand; these pass readily for what is stamped upon them for all the purposes of business.

We count 10 *mills* to every *cent*,
10 cents to every *dime*;
10 dimes are in the *dollar* spent,
10 dollars in the *eagle* chime,



6 Pence.



1 Shilling.



1 Sovereign.

ENGLISH OR STERLING MONEY.—This currency is used in England and the British colonies.

TABLE.

4 farthings, <i>qr.</i> , make	-	-	-	1 penny, <i>d.</i>
12 pence	-	-	-	1 shilling, <i>s.</i>
20 shillings	-	-	-	1 pound, <i>£</i> .
5 shillings	-	-	-	1 crown, <i>c.</i>
20 shillings	-	-	-	1 sovereign, <i>sov.</i>
21 shillings	-	-	-	1 guinea, <i>G.</i>

Observe the denominations—Pound, *£*; shilling, *s.* pence, *d.*; farthing, *qr.*; from the Latin words, *libra*, a pound; *solidus*, a shilling; *denarius*, a penny; *quadrans*, a farthing.

Farthings are marked in fractions thus:— $\frac{1}{4}$, one farthing; $\frac{2}{4}$, two farthings, or half-penny; $\frac{3}{4}$, three farthings.

The sovereign, which is made of gold, is of the same value as the pound. Whatever costs a pound, therefore, a sovereign will pay for. There is no coin called a pound.

4 *farthings* make one English *penny*;
12 pence are in one *shilling* found;
While 21 shillings make one *guinea*,
And 20 shillings form one *pound*.

5 shillings make a silver *crown*,
A sovereign is a golden *pound*.



50 Centimes.



1 Franc.



2 Francs.

FRENCH MONEY.—This money is used in France, and also in the French colonial possessions to some extent.

TABLE.

10 centimes,* c., make	- - -	1 décime, d.
10 décimes,†	- - -	1 franc,‡ fr.

Observe the denominations—Franc, *fr.*; décime, *d.*; centime, *c.*

The five-franc piece is frequently met with in this country, and passes currently at 94 cents. Coins of a less number of francs, pass also at the rate of 19 cents to the franc.

10 centimes in one *décime* meet;
10 decimes make one *franc* complete.

FEDERAL and FRENCH are decimal,
They count by tens alone:
Of coins it always take 10 small
To make the next larger one.
The ENGLISH currency, 'tis thought,
To the same standard will be brought,
The *guinea* then no more we'll see,
The *pound* 1000 mills will be;
And all the lower coins will range,
In just accordance with this change.

II. WEIGHTS.

TROY WEIGHT of silver and gold disposes;
APOTHECARIES' WEIGHT is for doctors' doses;
Whatever else your trade employs,
Comes under the rule of AVOIRDUPOIS.

* Pronounced *sontem*.

† Pronounced *dascem*.

‡ Pronounced *fraung*, or *frank*.



TROY WEIGHT—Is used to weigh Gold, Silver, Jewels, and Liquors.

TABLE.

24 grains, <i>gr.</i> , make	- - -	1 pennyweight, <i>dwt.</i>
20 pennyweights	- - -	1 ounce, <i>oz.</i>
12 ounces	- - -	1 pound, <i>lb.</i>

Observe the denominations—Pound, *lb.*; ounce, *oz.*; pennyweight, *dwt.*; grain, *gr.*

This rule for weighing gold, will state
That 24 *grains* make one *pennyweight* :
And 20 pennyweights in an *ounce* are found,
While 12 good ounces make a *pound*.

APOTHECARIES' WEIGHT.—Is used in mixing doses of medicine, but drugs and medicines, like most other merchandise, are bought and sold by AVOIRDUPOIS WEIGHT.

TABLE.

20 grains, <i>gr.</i> , make	- - -	1 scruple, $\mathfrak{d}$.
3 scruples	- - -	1 drachm, $\mathfrak{z}$.
8 drachms	- - -	1 ounce, $\mathfrak{z}$.
12 ounces	- - -	1 pound, <i>lb.</i>

Observe the denominations—Pound, *lb.*; ounce, $\mathfrak{z}$; drachm, $\mathfrak{z}$; scruple, $\mathfrak{d}$; grain, *gr.*

In mixing doses, Doctors say
That 20 *grains* one *scruple* weigh;
3 scruples make one *drachm* they hold,
8 drachms are to the ounce enrolled,
And ounces 12 for a *pound* are sold.

AVOIRDUPOIS WEIGHT—Is used in weighing all coarse and heavy goods, groceries, &c.; and all metals except silver and gold.

TABLE.

16 drachms, <i>dr.</i> , make	- - -	1 ounce, <i>oz.</i>
16 ounces	- - -	1 pound, <i>lb.</i>
25 pounds	- - -	1 quarter, <i>qr.</i>
4 quarters	- - -	1 hundred weight, <i>cwt.</i>
20 hundred weight	- - -	1 tun, <i>T.</i>

Observe the denominations—Tun, *T.* ; hundred weight, *cwt.* ; quarter, *qr.* ; pound, *lb.* ; ounce, *oz.* ; drachm, *dr.*

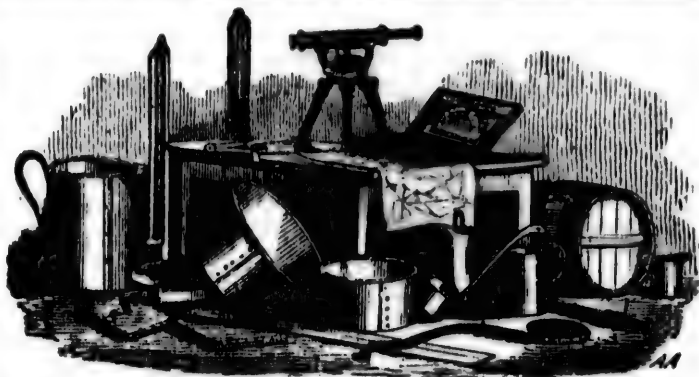
2000 pounds make a tun in the table ; when, as it sometimes is, it is 2240 lbs., 28 pounds make a quarter. Except in special cases, the tun is now regarded as 2000 pounds by the principal merchants of our cities.

16 *drachms* make one *ounce*,
16 ounces make one *pound*,
25 pounds one *quarter* counts,
4 quarters make a *hundred* round ;
And 20 hundred weight are run,
To make a full and perfect *tun*.

'Twas once absurdly held and said
112 pounds make a hundred weight ;
And then this table always read,
That a quarter hundred was 28

III. MEASURES.

By different measures, we obtain
Due quantities of wood or grain,
Of cloth, or land, or wine, and tell
How much of each we buy or sell.
CLOTH MEASURE is for ribbons, tapes,
And cloths, and silk, for coats or capes.
LONG MEASURE serves to tell and trace
The distances from place to place.
SURVEYORS' MEASURES, understand,
Are only used in measuring land.
DRY MEASURE tells how much we gain
Of salt, coal, fruit, potatoes, grain ;
While LIQUID MEASURE justly classes
Wine, spirits, beer, oil, milk, molasses.
SQUARE MEASURE deals with surfaces,
As walls, and floors, and fields, and seas ;
And CUBIC MEASURE ascertains
What any solid shape contains.
TIME MEASURE tells us, as they fly,
How days, months, years, are rushing by ;
And CIRCULAR MEASURE shows the worth
Of lines that circle round the earth,
And of the bands which reason's eye
Traces across the glittering sky.



1. MEASURES OF LENGTH.

CLOTH MEASURE—Is used to measure Cloths, Ribbons, Tapes, &c.

TABLE.

2½ inches, <i>in.</i> , make	-	-	1 nail, <i>n.</i>
4 nails	-	-	1 quarter of a yard, <i>qr.</i>
4 quarters	-	-	1 yard, <i>yd.</i>

FOREIGN CLOTH MEASURES.

2½ quarters, make	-	-	1 ell Hamburg, <i>E. H.</i>
3 quarters	-	-	1 ell Flemish, <i>E. F.</i>
5 quarters	-	-	1 ell English, <i>E. E.</i>
6 quarters	-	-	1 ell French, <i>E. Fr.</i>

Observe the regular denominations—Yard, *yd.*; quarter, *qr.*; nail, *n.*; inch, *in.*

In measuring cloth for use or sale,

2½ inches make one nail;

4 nails one quarter we regard,

And four full quarters make one yard.

Nails now are seldom used, we've heard,

Eighths and sixteenths are much preferred.

LONG MEASURE—Is used to measure distances, and to ascertain the length of anything without regard to breadth.

TABLE.

10 lines, <i>l.</i> , make	-	-	1 inch, <i>in.</i>
12 inches	-	-	1 foot, <i>ft.</i>
3 feet	-	-	1 yard, <i>yd.</i>
5½ yards	-	-	1 rod or pole, <i>p.</i>
40 poles, or 220 yards	-	-	1 furlong, <i>fur.</i>
8 furlongs	-	-	1 mile, <i>M.</i>
3 miles	-	-	1 league, <i>L.</i>
60 geographic, or 69½ statute miles	-	-	1 degree, <i>Deg.</i>
360 degrees	-	-	the circumference of the earth.

Observe the denominations—Degree, *Deg.*; league, *L.*; mile, *M.*; furlong, *fur.*; rod, or pole, *p.*; yard, *yd.*; foot, *ft.*; inch, *in.*; line, *l.*

Twelve lines make an inch in France.

In measuring the height of horses, the *hand*, 4 inches, is used; and in measuring the depth of water, the *fathom*, 6 feet, is used.

In measuring distances or lengths,
10 *lines* are said to make one *inch*;
12 inches make a perfect *foot*,
3 feet into a *yard* are put;
5½ yards make a *rod* or *pole*,
And 40 rods a *furlong* whole;
8 furlongs make a *mile* quite big,
And 3 full miles make up a *league*.
In measuring round the earth, we see,
That 60 miles make one *degree*;
Degrees 360, then,
The *earth's circumference* will span.

SURVEYOR'S MEASURE.—This measure is used in ascertaining the length and breadth of land, roads, &c.

TABLE.

7 92-100 inches, in., make -	1 link, <i>l</i> .
25 links -	1 pole, <i>p</i> .
4 poles, or 100 links -	1 chain, <i>c</i> .
10 chains -	1 furlong, <i>fur</i> .
8 furlongs -	1 mile, <i>M</i> .

Observe the denominations—Link, *l*; pole, *p*; chain, *c*; furlong, *fur*; mile, *M*.

7 inches and ninety-two hundredths, make
One *link* in the chain surveyors take,
100 links his *chain* embraces,
With 80 chains one *mile* he traces.

2. MEASURES OF CAPACITY.

LIQUID MEASURE.—Is used in measuring Wine, Spirits, Beer, Oil, Vinegar, Milk, Molasses, &c.

TABLE.

4 gills, <i>g</i> ., make -	1 pint, <i>pt</i> .
2 pints -	1 quart, <i>qt</i> .
4 quarts -	1 gallon, <i>gal</i> .
31½ gallons -	1 barrel, <i>bbl</i> .
2 barrels -	1 hogshead, <i>hhd</i> .
2 hogsheads -	1 pipe, <i>p</i> .
2 pipes -	1 tun, <i>t</i> .

Observe the regular denominations—Tun, *t*; pipe, *p*; hogshead, *hhd*; barrel, *bbl*; gallon, *gal*; quart, *qt*; pint, *pt*; gill, *g*.

MEASURES OF CAPACITY SELDOM USED.

TABLE.

9 gallons, <i>g.</i> , make	-	1 firkin, <i>f.</i>
10 gallons	-	1 anker, <i>a.</i>
2 firkins, or 18 gallons	-	1 kilderkin, <i>k.</i>
2 kilderkins, or 36 gallons	-	1 barrel of beer, &c. <i>bb.</i>
1½ barrels, or 54 gallons	-	1 hogshead of beer, <i>hhd.</i>
42 gallons	-	1 tierce, <i>t.</i>
2 tierces, or 84 gallons	-	1 puncheon, <i>p.</i>

Most liquids are now sold by the gallon, quart, and pint, and not by the other denominations of liquid measure; in fact, vessels are rarely made to hold the exact quantities stated in the table, and frequently retain the names though containing much more, the hogshead and barrel for instance.

In measuring liquids, first we take
 4 little *gills* one *pint* to make;
 2 pints then make one *quart*, and still
 4 quarts the *gallon* measure fill.
 Gallons one half and 31,
 Will fill a *barrel* to the bung.
 2 barrels to the *hogshead* go,
 2 hogsheads fill a *pipe*, and so
 2 pipes will near a *tun* o'erflow.

Though many *good things* are measured still
 By gallon, quart, and pint, and gill,
 Yet Liquid Measure oft seems to me
 "The measure of human misery."
 For O, what countless evils come
 From brandy, whiskey, gin, and rum,
 Which it were better ne'er to touch,
 For a *single drop* is "a drop too much."

DRY MEASURE—Is used in measuring Grain, Potatoes, Fruit, Coal, Salt, Seeds, &c.

TABLE.

2 pints, <i>pt.</i> , make	-	1 quart, <i>qt.</i>
8 quarts	-	1 peck, <i>p.</i>
4 pecks	-	1 bushel, <i>bush.</i>
36 bushels	-	1 chaldron of coal, <i>chal.</i>
8 bushels	-	1 quarter of corn, <i>qr.</i>

Observe the regular denominations—Chaldron, *chal.*; bushel, *bush.*; peck, *p.*; quart, *qt.*; pint, *pt.*

2 pints DRY MEASURE make one quart,
 8 quarts one honest peck contains,
 4 pecks are in a bushel brought;
 8 bushels, if you are measuring grains,
 Are to the quarter* counted out;
 But if bituminous coal,† you take
 Then 6 and 30 bushels make
 The chaldron, which in trade obtains,

3. MEASURES OF CONTENT.

LAND OR SQUARE MEASURE—Is used in reckoning the contents of any surface by its length and breadth.

TABLE.

144 square inches, <i>s. in.</i> , make	1 square foot, <i>S. F.</i>
9 square feet - - -	1 square yard, <i>S. Y.</i>
30½ square yards - - -	1 square rod, pole, or perch, <i>S. P.</i>
40 square poles - - -	1 square rood, <i>S. R.</i>
4 square roods - - -	1 square acre, <i>S. A.</i>
640 square acres - - -	1 square mile, <i>S. M.</i>

Observe the denominations—Square mile, *S. M.*; square acres, *S. A.*; square rood, *S. R.*; square perch, *S. P.*; square yard, *S. Y.*; square foot, *S. F.*; square inch, *S. I.*

Square inches one hundred and forty-four
 Make one *square foot*, and nothing more.
9 square feet make one *square yard*,
30 yards and a quarter are one *pole squared*;
40 square poles make one *square rood*,
 Yet *4 square roods* make an *acre good*;
 And *acres 640* the while,
 Are wanted to make up one *square mile*.

SOLID OR CUBIC MEASURE—Is used to reckon the contents of anything by its length, breadth, and depth.

TABLE.

1728 solid inches, <i>s. in.</i> , make	1 solid foot, <i>S. F.</i>
40 feet of round, or } timber	1 tun, <i>Tun.</i>
50 feet of hewn	
27 solid feet - - -	1 solid yard, <i>S. Yd.</i>
16 solid feet of wood - -	1 cord foot of wood, <i>Ft. W.</i>
8 cord feet of wood - - -	1 cord, <i>C.</i>

Observe the denominations—Cord, *C.*; cord foot of wood, *Ft. W.*; solid yard, *S. Y.*; solid foot, *S. F.*; solid inch, *S. I.*

* Wheat is measured in Great Britain by the quarter of 480 lbs.
 † Bituminous, or soft coal, is sold by measure, and anthracite, or hard coal, by weight.

One thousand seven hundred and twenty-eight
 Inches one solid foot complete.
 In timber, 40 feet, if round,
 Or 50 hewn, a tun is found.
 In measuring ships the rule must run,
 Feet 2 and 40 make a tun.
 Feet 27 one solid yard we rate,
 A cord of wood one hundred twenty-eight.



4. MEASURES OF DURATION AND CIRCULAR DISTANCES.

TIME MEASURE—Is used in computing the different periods in which any transaction or event occurs.

TABLE.

60 seconds. <i>sec.</i> , make	-	-	-	1 minute, <i>m.</i>
60 minutes	-	-	-	1 hour, <i>h.</i>
24 hours	-	-	-	1 day, <i>d.</i>
7 days	-	-	-	1 week, <i>w.</i>
4 weeks	-	-	-	1 month, <i>mo.</i>
12 months	-	-	-	1 year, <i>yr.</i>
100 years	-	-	-	1 century, <i>C.</i>

Observe the denominations—Century, *C.*; year, *yr.*; month, *mo.*; week, *w.*; day, *d.*; hour, *h.*; minute, *m.*; second, *sec.*

12 calendar months, or 13 lunar months, 1 day, and 6 hours, or 365 days, 6 hours, 1 common, or Julian year.

The year is divided by the calendar as follows:—

	DAYS.		DAYS.
1st month, January, has	31	7th month, July, has	31
2d " February,	28	8th " August,	31
3d " March,	31	9th " September,	30
4th " April,	30	10th " October,	31
5th " May,	31	11th " November,	30
6th " June,	30	12th " December,	31
	181		365

February has 29 days every fourth year. which is called Bisextile, or Leap Year. Every Leap Year may be divided by 4 without a remainder; other years, divided by 4, leave one, which shows their number after Leap Year. Thus, 1854 divided by 4, leaves a remainder of 2: that is, it is the second after Leap Year, &c., &c.

The number of days in each month, may easily be remembered by the following verse:—

Thirty days have September,
April, June, and November;
All the rest have thirty-one,
Excepting February alone,
Which hath twenty-eight, nay more,
Hath twenty-nine one year in four.

There are in every year four seasons, viz: **SPRING, SUMMER, AUTUMN, and WINTER.**

The Spring months are March, April, and May.

The Summer months are June, July, and August.

The Autumn months are September, October, and November.

The Winter months are December, January, and February.

The Spring is the season of flowers; the Summer of fruits; the Autumn of the decay of vegetation and the fall of the leaf; and the Winter of frost and snow.

60 seconds make 1 minute,
Time enough some good to do;
60 minutes make 1 hour,
Who will dare to waste it? Who?
24 hours make up the day,
Time for work, and sleep, and play;
7 days to the week are given,
Six for toil and one for heaven.
God gives me six for work and play,
I will not steal the seventh away.
4 weeks in every month appear,
12 months make up the rolling year;
100 years—few live them to see—
Are what are called a century.

CIRCULAR MEASURE—Is used by Astronomers, Navigators, &c., in making their calculations.

TABLE.

60 seconds, " make	- - -	1 minute, '
60 minutes	- - -	1 degree, °
30 degrees	- - -	1 sign, S.
12 signs, or 360 degrees	-	1 circle of the Zodiac, C.

Observe the denominations—Circle, C.; sign, S.; degree, °; minute, ' ; second, ".

60 seconds make one minute,
 60 minutes one degree :
 30 degrees one sign has in it,
 12 signs we in { a circle } sec.
 the zodiac }

'Tis knowledge gained from this, that guides
 The ship, that o'er the ocean rides,
 And shows the pilot how to steer
 From place to place, remote or near.

IV. BOOKS, PAPER, AND PARCHMENT.

BOOKS, PAPER, PARCHMENT, all concern
 Men of a literary turn:
 As authors, printers, and booksellers—
 A race of genuine clever fellows—
 The paper manufacturer, too,
 With these, of course, has much to do ;
 The stationer and binder then—
 Known as industrious, thrifty men—
 Bear each an honorable part
 In the noble, intellectual art,
 Of furnishing the mind and heart.



I. PAPER AND PARCHMENT.

TABLE OF PAPER AND PARCHMENT.—This table is used by
 Papermakers, Printers, and dealers in Stationery, &c., &c.

TABLE.

24 sheets of paper, make	-	-	-	1 quire, <i>qr.</i>
20 quires	-	-	-	1 ream, <i>Rm.</i>
2 reams	-	-	-	1 bundle, <i>Bdl.</i>
10 reams	-	-	-	1 bale, <i>Bl.</i>

12 skins of parchment - - - 1 dozen, *doz.*
 5 dozen - - - - - 1 roll, *rl.*

Observe the denominations—Quire, *qr.*; ream, *Rm.*; bundle, *Bdl.*; bale, *Ble.*; dozen, *doz.*; roll, *rl.*

Two dozen *sheets* one *quire* will take,
 And 20 quires one *ream* composes;
 2 reams we in a *bundle* make,
 10 bundles a full *bale* encloses.

By *dozens* parchment-skins are told;
 12 to the dozen, as of old;
 5 dozen for a *roll* are sold.

The different sizes of paper are—Foolscap, post, demi, medium, royal, super-royal, imperial, and elephant. Larger papers are described by their length and breadth in inches; thus, 20 by 32, 24 by 38, 26 by 40, 29 by 44, &c., &c.

2. SIZES OF BOOKS.

TABLE OF BOOKS.—This table is used by Authors, Printers, and Booksellers, in ascertaining and naming the sizes of books.

TABLE.

1 sheet of paper folded into 2 leaves is a folio, *Fol.*
 1 sheet of paper folded into 4 leaves is a quarto, *4to.*
 1 sheet of paper folded into 8 leaves is an octavo, *8vo.*
 1 sheet of paper folded into 12 leaves is a duodecimo, *12mo.*
 1 sheet of paper folded into 18 leaves is an octodecimo, *18mo.*

Observe the denominations—Folio, *fol.*; quarto, *4to.*; octavo, *8vo.*; duodecimo, *12mo.*; octodecimo, *18mo.*

Whoever with a book engages,
 Well knows each leaf will count 2 pages;
 One *folio* sheet 2 leaves will rate,
 A *quarto* 4, *octavo* 8;
 A *duodecimo** a dozen clean,
 An *octodecimo* eighteen;
Vicessimo quarto makes up twenty-four.
Tricessimo secundo thirty-two, no more.

* The duodecimo, octodecimo, vicessimo quarto, and tricessimo secundo, which are Latin numerals, are generally called 12mo., 18mo., 24mo., and 32mo. There are also 48mo., 64mo., and 72mo.

V. MISCELLANEOUS TABLES.

1. TABLE OF WEIGHTS.

A barrel of flour weighs	- - -	196 lbs.
A barrel of beef or pork	- - -	200 "
A barrel of pot ashes	- - -	200 "
A firkin of butter	- - -	56 "
A bushel of salt	- - -	56 "
A peck of salt	- - -	14 "
A gallon of train oil	- - -	7½ "
A stone of wire weighs	- - -	10½ "
A stone of sheet iron, or horseman's weight	- - -	14 "
A quintal of fish	- - -	100 "
A faggot of steel	- - -	120 "
A fother of lead	- - -	2184 "

2. TABLE OF PARTICULARS.

12 things make	- - -	1 dozen, <i>doz.</i>
12 dozen, or 144	- - -	1 gross, <i>gro.</i>
12 gross or 1728	- - -	1 great gross, <i>g. gro.</i>
20 things	- - -	1 score.
5 score	- - -	1 hundred, <i>C.</i>

3. VALUE OF SILVER AND GOLD COINS.

An English shilling	- - -	\$ cts.
" " crown	- - -	24
" " sovereign	- - -	1 20
" " pound	- - -	4 84
" " guinea	- - -	5 00
A franc of France	- - -	19
A thaler of Germany	- - -	67
A Spanish doubloon	- - -	16 00
A South American doubloon	- - -	15 60
Four shillings and two pence sterling	- - -	1 00

4. OLD ENGLISH COINS.

A groat	- - -	s. d.
A tester	- - -	4
A noble	- - -	6
An angel	- - -	6 8
A mark	- - -	10 0
	- - -	13 4

5. TABLES OF ALIQUOT, OR EVEN PARTS.

Being fractions or broken parts of certain things and their value.

Parts of a Dollar.



1 cent is	$\frac{1}{100}$
3 cts. are	$\frac{3}{100}$
5 " "	$\frac{5}{100}$
10 " "	$\frac{1}{10}$
25 " "	$\frac{1}{4}$
50 " "	$\frac{1}{2}$
62 $\frac{1}{2}$ " "	$\frac{5}{8}$
75 " "	$\frac{3}{4}$
87 $\frac{1}{2}$ " "	$\frac{7}{8}$



Parts of a Penny.

1 farthing is	$\frac{1}{4}$
2 farth's are	$\frac{1}{2}$
3 " "	$\frac{3}{4}$

Parts of a Shilling.



1 penny is	$\frac{1}{12}$
1 $\frac{1}{2}$ pence are	$\frac{1}{8}$
2 " "	$\frac{1}{6}$
3 " "	$\frac{1}{4}$
4 " "	$\frac{1}{3}$
5 " "	$\frac{5}{12}$
6 " "	$\frac{1}{2}$
7 " "	$\frac{7}{12}$
8 " "	$\frac{2}{3}$
9 " "	$\frac{3}{4}$



Parts of a Pound.



s. d.	
1 8	are
2 0	"
2 6	"
3 4	"
4 0	"
5 0	"
6 8	"
10 0	"
12 0	"
13 0	"
15 0	"
16 0	"
17 0	"
18 0	"

Parts of a Cwt. of 112 lbs.

4 lbs.	$\frac{1}{28}$
7 " "	$\frac{1}{16}$
8 " "	$\frac{1}{14}$
14 " "	$\frac{1}{8}$
16 " "	$\frac{1}{7}$
28 " "	$\frac{1}{4}$
56 " "	$\frac{1}{2}$
84 " "	$\frac{3}{4}$

Parts of a Tun of 2240 lbs.

cwt. qrs.	
1 0 is	$\frac{1}{20}$
2 0 are	$\frac{1}{10}$
2 2 " "	$\frac{1}{8}$
4 0 " "	$\frac{1}{5}$
5 0 " "	$\frac{1}{4}$
10 0 " "	$\frac{1}{2}$
15 0 " "	$\frac{3}{4}$

Parts of a Year of 12 months.

1 mo. is	$\frac{1}{12}$
2 mos. are	$\frac{1}{6}$
3 " "	$\frac{1}{4}$
4 " "	$\frac{1}{3}$
5 " "	$\frac{5}{12}$
6 " "	$\frac{1}{2}$
8 " "	$\frac{2}{3}$
9 " "	$\frac{3}{4}$

Parts of a Cwt. of 100 lbs.

1 lb. is	$\frac{1}{100}$
5 " "	$\frac{1}{20}$
10 " "	$\frac{1}{10}$
20 " "	$\frac{1}{5}$
25 " "	$\frac{1}{4}$
50 " "	$\frac{1}{2}$
75 " "	$\frac{3}{4}$
80 " "	$\frac{4}{5}$

Fractions in Arithmetic are so made, that if all the parts into which a number is divided are added together, they will just equal that number; as when an apple is cut into parts of various shapes, you can join them together and form the apple again.

6. TABLES OF STERLING CURRENCY.

Table of Shillings and Pence.

s.	d.	d.	s.	d.
1	is	12	20	are
2	are	24	30	"
3	"	36	40	"
4	"	48	50	"
5	"	60	60	"
6	"	72	70	"
7	"	84	80	"
8	"	96	90	"
9	"	108	100	"
10	"	120	110	"
11	"	132	120	"
12	"	144	130	"

Table of Shillings and Pounds.

s.	£	s.	£	s.
20	are	1	0	140
30	"	1	10	150
40	"	2	0	160
50	"	2	10	170
60	"	3	0	180
70	"	3	10	190
80	"	4	0	200
90	"	4	10	210
100	"	5	0	220
110	"	5	10	230
120	"	6	0	240
130	"	6	10	500

7. TABLE SHOWING THE SHILLINGS AND PENCE

Currency of the principal States of the Union and the British Provinces, with its Value in Dollars and Cents.

TABLE.

In Maine,
 " New Hampshire,
 " Vermont,
 " Massachusetts,
 " Rhode Island,
 " Connecticut,
 " Virginia,
 " Kentucky,
 " Tennessee,

16 $\frac{1}{2}$ cents are called
 one shilling,
 and six shillings
 make one
 dollar.

In New York,
 " Ohio,
 " North Carolina,

12 $\frac{1}{2}$ cents are called
 one shilling,
 and eight shillings
 make one dollar.

In New Jersey,
 " Pennsylvania,
 " Delaware,
 " Maryland,

13 $\frac{1}{2}$ cents are called
 one shilling,
 and seven shillings
 and sixpence make
 one dollar.

In South Carolina,
 " Georgia,

21 2-5 cents are called
 one shilling,
 and four shillings
 and eight pence
 make one dollar.

In the remaining thirteen States, the cent, dime, and dollar, of Federal money, are generally used.

BRITISH PROVINCES.

In Canada East,
" Canada West,
" Nova Scotia,
" New Brunswick,

} 20 cents are called
one shilling,
and five shillings
make one dollar.

8. TABLES OF THE VALUE OF SHILLINGS AND PENCE
OF THE SEVERAL STATE CURRENCIES, IN DOLLARS AND CENTS.



One Shilling
New York currency



Two Shillings,
New York currency.



Sixpence,
New York currency.

8 Shillings to the Dollar.			6 Shillings to the Dollar.			4 Shillings and 8 Pence to the Dollar.		
\$	cts.	s. d.	\$	cts.	s. d.	\$	cts.	s. d.
0	06½	are 0 6	0	06½	are 0 4½	0	06½	are 0 3½ or 4d.
0	12½	" 1 0	0	12½	" 0 9	0	12½	" 0 7
0	18½	" 1 6	0	18½	" 1 1½	0	18½	" 0 10½
0	25	" 2 0	0	25	" 1 6	0	25	" 1 2
0	31½	" 2 6	0	31½	" 1 10½	0	31½	" 1 5½ or 1s.6d.
0	37½	" 3 0	0	37½	" 2 3	0	37½	" 1 9
0	43½	" 3 6	0	43½	" 2 7½	0	43½	" 2 0½ or 2s.
0	50	" 4 0	0	50	" 3 0	0	50	" 2 4
0	56½	" 4 6	0	56½	" 3 4½	0	56½	" 2 7½
0	62½	" 5 0	0	62½	" 3 9	0	62½	" 2 11 or 3s.
0	68½	" 5 6	0	68½	" 4 1½	0	68½	" 3 2½
0	75	" 6 0	0	75	" 4 6	0	75	" 3 6
0	81½	" 6 6	0	81½	" 4 10½	0	81½	" 3 9½
0	87½	" 7 0	0	87½	" 5 3	0	87½	" 4 1 or 4s.
0	93½	" 7 6	0	93½	" 5 7½	0	93½	" 4 4½
1	00	" 8 0	1	00	" 6 0	1	00	" 4 8
1	12½	" 9 0	1	12½	" 6 9	1	12½	" 5 3
1	25	" 10 0	1	25	" 7 6	1	25	" 5 10
1	37½	" 11 0	1	37½	" 8 3	1	37½	" 6 5
1	50	" 12 0	1	50	" 9 0	1	50	" 7 0

In the States, where 8 shillings make a dollar, the 6 $\frac{1}{2}$ cent Spanish coin is called "sixpence," and the 12 $\frac{1}{2}$ cent coin a "shilling;" where 6 shillings make a dollar, the former is called "fourpence halfpenny" and the latter "ninepence," but in the states bordering on the Gulf of Mexico, the 6 $\frac{1}{2}$ cent coin is called a "*pécune*," or picayune, and the 12 $\frac{1}{2}$ cent coin a "bit," these coins being everywhere used in the United States

9. SHILLINGS AND PENCE IN CENTS,

WITH SEVEN SHILLINGS AND SIXPENCE TO THE DOLLAR.

\$	cts.	s.	d.	
0	06 $\frac{1}{2}$	are	0	5 $\frac{1}{2}$ called five pence, or a "fip" in trade.
0	12 $\frac{1}{2}$	"	0	11 $\frac{1}{2}$ " eleven pence, or a "levy" "
0	18 $\frac{1}{2}$	"	1	4 $\frac{1}{2}$ " a levy and a fip " "
0	25	"	1	10 $\frac{1}{2}$ " two levies " "
0	31 $\frac{1}{2}$	"	2	4 $\frac{1}{2}$ " two levies and a fip " "
0	37 $\frac{1}{2}$	"	2	9 $\frac{1}{2}$ " three levies " "
0	43 $\frac{1}{2}$	"	3	3 $\frac{1}{2}$ " three levies and a fip " "
0	50	"	3	9 " four levies " "
0	56 $\frac{1}{2}$	"	4	2 $\frac{1}{2}$ " four levies and a fip " "
0	62 $\frac{1}{2}$	"	4	8 $\frac{1}{2}$ " five levies " "
0	68 $\frac{1}{2}$	"	5	1 $\frac{1}{2}$ " five levies and a fip " "
0	75	"	5	7 $\frac{1}{2}$ " six levies " "
0	81 $\frac{1}{2}$	"	6	1 $\frac{1}{2}$ " six levies and a fip " "
0	87 $\frac{1}{2}$	"	6	6 $\frac{1}{2}$ " seven levies " "
0	93 $\frac{1}{2}$	"	7	0 $\frac{1}{2}$ " seven levies and a fip " "
1	00	"	7	6 " eight levies " "
1	12 $\frac{1}{2}$	"	8	5 $\frac{1}{2}$ " a dollar and a levy " "
1	25	"	9	4 $\frac{1}{2}$ " " " two levies " "
1	37 $\frac{1}{2}$	"	10	1 $\frac{1}{2}$ " " " three levies " "
1	50	"	11	3 " " " four levies " "

The various values of the shilling in the preceding tables resulted from the unequal depreciation of the paper money shilling of the American Colonies under English rule, and at the time of the Revolution. Originally its value was the same as the former value of the English shilling—22 1-5 cents—from which it fell to 21 2-5 in some colonies or states, and to 16 $\frac{1}{2}$ 13 $\frac{1}{2}$, and 12 $\frac{1}{2}$ cents in others, where it still remains.

NOTE.—The foregoing tables of currency will give children the necessary knowledge of the various denominations of a kind of money of which they daily hear, and need to understand. The names shilling and penny came from England with our English ancestors, and are still extensively used in this country. We have in the United States, however, a national currency, with more simply combined and better divisions, which ought long since to have superseded every other in use. Teachers

could exert a strong influence in behalf of the Federal currency by taking care to explain its properties and advantages to children, who would give it the preference in after life, because of its simplicity and the ease by which it may be reckoned; and thus it would come to be universally adopted. As Federal money increases or diminishes by tens like common numbers, and as dollars and cents added to, subtracted from, multiplied or divided by dollars and cents always yield either dollars or cents, while Sterling money subjected to any of these operations requires afterward to be reduced by division to its proper denomination; therefore, the one has in many senses superior claims to use over the other. In France a similar currency has long since been adopted, and in England it probably will be ere long. In time the decimal system will no doubt be applied also to weights and measures in most commercial countries, as in France is already the case.

10. TABLE OF ARITHMETICAL SIGNS.

+ *Plus*, or more, meaning added to. This sign when placed between two numbers, shows that they are to be added together and considered as one number; thus, $24+36$; that is, 24 added to 36, which is read 24 plus 36.

= *Equalitas*, or equality, meaning equal to. This sign when placed between two or more numbers, shows that those which precede the sign are equal to those which follow it; thus, $24+36=60$; that is, 24 added to 36 are equal to 60.

— *Minus*, or less, meaning subtracted from. This sign, when placed between two numbers, shows that one is to be taken from the other; thus, $84-42$; that is, 42 is to be subtracted from 84, which is read 84 minus 42.

× *Multiplico*, to multiply, meaning multiplied by. This sign placed between two numbers signifies that one is to be multiplied by the other; thus, 24×36 ; that is, 24 is to be multiplied by 36, which is read 24 multiplied by 36.

÷ *Divido*, to part, meaning divided by. This sign placed between two numbers shows that one is to be divided by the other; thus, $60\div 15$; that is, 60 is to be divided by 15. When placed horizontally between two numbers, the one above and the other below, the dots are dispensed with; thus, $\frac{60}{15}$; that is, 1 divided by 2.

EXAMPLES.

Read the following: $72+47=119$; $656+809=1465$; $1400+700=2100$; $76-38=38$; $104-26=78$; $290-145=145$; $25\times 12=300$; $99\times 9=891$; $425\times 50=21250$; $64\div 8=8$; $144\div 12=12$; $1728\div 12=144$; $1728\div 144=12$; $576\times 12=6912$; $64\div 8\times 16=128$; $36\times 12=432$; $500\times 10=5000$; $47\times 90=4230$; $4-2\times 6=10$.

— *Vinculum*, or a bond of union, meaning that the numbers over which it is placed, are to be considered as united or one, and to be subjected to the same operation; thus, $12+13\times 19$.

: :: *Proportio*, or proportion. These signs are placed between numbers to show their relation to each other, so that knowing the relation of two numbers, two others may be found that have the same relation; thus, $3 : 6 :: 9 : 18$, which is read as follows: As 3 is to 6 so is 9 to 18, because 3 is the half of 6 and 9 half of 18, therefore the proportion of 3 to 6 is the same as 9 to 18. This sign is read thus: As, is to, so is, to.

³ *Potentia*, or power. Every number is a power, and to increase its power you must multiply it by itself the number of times answering to the power to which you wish to raise it. The figure which expresses the power to which another is to be raised is called an exponent or index, which is a small figure placed against its right hand upper part; thus, 4^3 ; that is, 4 is to be multiplied three times by itself, or $4 \times 4 \times 4 = 64$; therefore, 64 is the third power of 4, and is the same as 4^3 .

$\sqrt{}$ *Radix*, or root, meaning that the root is to be extracted. The root of a number is such a one as multiplied by itself a given number of times will produce the number whose root is wanted. $\sqrt{}$ means the square root, $\sqrt[3]{}$ the cube root, $\sqrt[4]{}$ the fourth root, $\sqrt[5]{}$ the fifth root, &c.; therefore, $\sqrt{64}$ shows that 8 is wanted, because $8 \times 8 = 64$. $\sqrt[3]{64}$ shows that 4 is wanted, because $4 \times 4 \times 4 = 64$. $\sqrt[4]{16}$ shows that 2 is wanted, because $2 \times 2 \times 2 \times 2 = 16$. $\sqrt[5]{243}$ shows that 3 is wanted, because $3 \times 3 \times 3 \times 3 \times 3 = 243$.

ILLUSTRATIVE EXAMPLES.

ODD NUMBERS.

Odd numbers begin with 1, and consist of every second following figure; thus, 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, are odd numbers.

Odd numbers $\times$ by odd numbers = odd numbers.

Odd numbers $\times$ even numbers = even numbers.

Even numbers $\times$ even numbers = even numbers.

Even numbers $+$ even numbers = even numbers.

Odd numbers $+$ odd numbers = even numbers.

Odd numbers $+$ even numbers = odd numbers.

Many of the odd numbers above 3 that can only be $+$ 1, can be $+$ 6 by subtracting 1 or adding 1. For instance, 13 can only be $+$ 1 but $13 - 1$ may be $+$ 6, so with 17, 19, 25, &c.

WHAT IS A TRILLION? a thousand billions; written thus—
1,000,000,000,000.

But if you were to count 200 a minute, it would take you 6312 years 34 days 5 hours and 20 minutes to count it, which is nearly twice as long as the world has existed.

THE NUMBER NINE.

The powers of the figure 9 are more numerous and remarkable than those of any other figure.

The figures composing the product of every figure from 1 to 9 multiplied into 9, added together, make NINE; thus—

9	9	9
1	4	7
9. 9	36. 3+6=9	63. 6+3=9
2	5	8
18. 1+8=9	45. 4+5=9	72. 7+2=9
3	6	9
27. 2+7=9	54. 5+4=9	81. 8+1=9

The above multipliers from 1 to 9 added together=45 and $4+5$ =NINE. Their several products added together=405, which $\div 9=45$ and $4+5$ =NINE. The amount of the first product (9) added to the remaining eight products (eight 9s)=81, and $8+1=9$ and $81=9\times 9$; 81 is therefore called the *square* of NINE. The 405 mentioned above $\div 81=486$, and this $\div 9=54$, and $5+4$ =NINE. The number of changes that may be rung on 9 bells is 362,880, which figures added together make 27, and $7+2$ =NINE. And $362,880\div 9=40,320$, and these figures added together make NINE.

THE GAME OF CHESS.

Sessa, who invented the game of chess for an East Indian king, was promised in return any reward which he should ask. Understanding, better than his patron, the power of numbers, and wishing to rebuke his rashness, he asked simply for one grain of wheat for the first square on the chess-board, two for the second, four for the third, and so doubling to the sixty-fourth. The king was astonished at the apparent smallness of the gift, but still more so, when told that the number of grains would be 18,446,744,073,709,551,615. There are in a bushel 589,824 grains of wheat, and $18,446,744,073,709,551,615 \div 589,824$ gives 31,274,997,411,295 bushels; more than the whole surface of the earth could produce in many years, and more in value probably than the whole wealth of the globe. The king, therefore, did not keep his promise!

GEORGE BIDDER.

This wonderful boy, whose portrait is on the title-page, when very young and uneducated, could solve the most difficult arithmetical questions entirely in his own mind without the use of pencil or slate, and more quickly than any one could in the common way.



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